



US EPA RECORDS CENTER REGION 5



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SUPPLEMENTAL SOIL SAMPLING PLAN

AMERICAN CHEMICAL SERVICES
NPL SITE
GRIFFITH, INDIANA

JUNE 1993

PREPARED FOR:
AMERICAN CHEMICAL SERVICES SITE
TECHNICAL COMMITTEE
GRIFFITH, INDIANA

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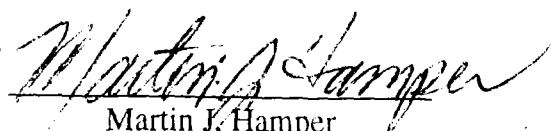
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PROJECT
20007001

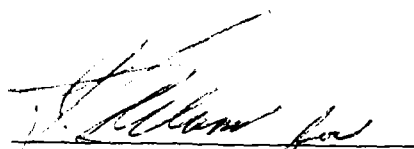
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1

OBJECTIVES

The primary objective of the supplemental soil sampling program is to determine if soil contamination is present above the clean-up levels listed in the Record of Decision (ROD) in areas not studied in the Remedial Investigation/Feasibility Study (RI/FS).

Data use objectives of the sampling program include:

- Analyze the analytical data and compare results to soil cleanup levels
- Based upon this comparison, estimate the potential volume of additional soils exceeding the soil clean-up levels
- Utilize the data and associated calculations in the Remedial Design/Remedial Action (RD/RA)

[chi 607 41]

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SCOPE

This Sampling Plan describes the procedures and practices to be used in obtaining soil samples for use in determining if soil contamination extends beyond the boundaries of the known contaminated areas. These procedures include a description of the sample locations, sample designation system, personnel and their responsibilities, and the sampling methods to be employed. These methods include:

- Soil borings and soil sampling

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SOIL BORING AND SAMPLING LOCATIONS

Soil borings will be marked off in the field prior to drilling activities. The location of the main areas of concern (Off-site Containment, Kapica-Pazmey, Still Bottom/Treatment Lagoon, On-site Containment, and other ACS Plant Areas) are shown on Figures 1 and 2.

A total of 20 soil borings will be performed and 35 soil samples will be collected and submitted for laboratory analysis from the above mentioned areas (plus a total of four duplicate samples and two matrix spike/matrix spike duplicates). The proposed boring locations and sample depth intervals are described below. Water levels from nearby wells and piezometers will be measured to assist in determining the expected depth to the water table at each location.

LOCATION OF SAMPLES

Borings to collect soil samples will be located in the areas shown on Figure 1 (On-site areas) and Figure 2 (Off-site areas).

Offsite Containment Area

Seven soil borings will be drilled around the Off-site Containment Area (Figure 1) and two soil samples from each boring will be submitted for laboratory analysis to further define the horizontal extent of soil contamination in this area (Boring SB77 to SB83). The soil boring locations are based upon the data in the RI report.

Each boring will be drilled to a depth of 15 feet with soil samples collected from the 5-10 ft interval and the 10-15 ft interval. No samples are to be collected from the 0-5 ft interval, which is mostly cover material. The actual depths of each boring will depend upon the depth to the water table at each location. The average depth to the water table in this area is 12 ft.

Kapica-Pazmey Area

Five borings will be drilled around the Kapica-Pazmey Area (Figure 1) and soil samples will be collected to further define the horizontal and vertical extent of soil contamination in this area. The soil boring locations are based upon the data in the RI report.

Three soil borings (SB84, SB85 and SB86) to 5 feet will be performed around the Kapica-Pazmey Area to further define the horizontal extent of soil contamination. One sample will be collected and submitted for analysis from each boring.

Two borings (SB87 and SB88) will be advanced to 15 feet within the previously investigated area to further define the vertical extent of soil contamination. Soil samples will be collected from the 5-10 ft and the 10-15 ft intervals. The actual depth of each boring will depend upon depth of the water table at each location. The average depth to the water table in this area is 17 ft. The 0-5 ft interval has been previously characterized and does not require additional sampling.

Still Bottom/Treatment Lagoon Area

Six soil borings (SB89 through SB94) will be drilled around the Still Bottoms/Treatment Lagoon Area (Figure 2) and two soil samples from each boring will be collected and submitted for laboratory analysis to further define the horizontal and vertical extent of soil contamination in this area.

The six borings will be drilled to a depth of 10 feet with soil samples collected from the 0-5 ft and 5-10 ft intervals. The actual total depth of each boring will depend upon the depth of the water table at each boring location. The average depth to the water table in this area is 8 ft.

On-site Containment Area

Two soil borings (SB95 and SB96) will be drilled around the On-site Containment Area (Figure 2) and one sample will be collected from each boring to further define the horizontal and vertical extent of soil contamination in this area.

Each boring will be performed to five feet with soil samples being collected from the 2-4 ft interval. The actual depth of each boring will depend upon the depth to the water table at each location. The average depth to the water table in this area is 5.5 ft.

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SAMPLE DESIGNATION

A sampling numbering system will be used to identify each investigative and quality control sample. Each sample identifier will include the project identifier code, sample type and location code, and a sampling event code. The sampler will maintain a log book containing the sample identification listings.

Project Identifier Code

A three letter designation will be implemented to identify the sampling site. The project identifier will be "ACS" to signify this sampling program.

Sample Type and Location Code

Each sample will be identified by a two letter code corresponding to the sample type. Sample type codes to be utilized for the subtasks covered in this sampling plan include:

- SS - split spoon sample
- SB - soil boring sample
- MS(D) - matrix spike (duplicate) sample

Other letter designators may be added as necessary.

The location code will follow the sample type code. The location code consists of a two- to five-digit numeric or alpha-numeric code that indicates the sample location.

Sampling Round Code/Duplicate Code

A two-digit numerical code will be used to designate additional information. Duplicate samples will be designated by the round code preceded by a 9. For the soil boring samples, the round code will represent the depth of the sample in feet below the ground surface.

Examples of Sample Numbers

An example of a sample number code is as follows:

- ACS-SSSB55-10 = ACS, split spoon sample from soil boring 55 at a depth of 10 feet

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SAMPLING EQUIPMENT AND PROCEDURES

SOIL BORINGS

Each soil boring will be augered initially to one foot below the ground surface and then continuously sampled at two-foot intervals (i.e., 1'-3', 3'-5', etc.) using the American Standard Test for Materials (ASTM) method ASTM D-1586. Borings will be advanced to depths ranging from 5 ft to 15 ft, depending on location of the individual soil boring, visual observations and depth to the water table. Borings will be logged by a Warzyn Geologist. Each split-spoon sample will be screened utilizing a Photoionization Detector (PID) for the presence of volatile organic compounds (VOCs). Readings obtained from the PID will be recorded onto the boring logs from their respective depth intervals. Samples will be collected for analysis of VOCs, semi-volatile organic compounds (SVOCs), and polychlorinated biphenyls (PCBs). Soil samples collected for VOC analysis will be placed into sample jars with no headspace. All soil samples will be placed into laboratory cleaned, glass containers for quality assurance.

Soil samples submitted for analysis will be selected based on PID readings obtained during field screening of samples, and visual (staining of soils) and olfactory observations.

Each boring, upon completion, will be backfilled with bentonite chips to the ground surface. All drilling and sampling tools will be cleaned after each boring to minimize the possibility of cross contamination between soil borings. Decontamination procedures are presented in Section 6.

PERSONNEL AND RESPONSIBILITIES

Personnel working at the ACS site on this sampling program will have been trained in health and safety matters relating to hazardous waste site investigations. Efforts will be made to use the same personnel throughout the course of the field work to optimize familiarity with site conditions.

A two-person drilling crew under the supervision of a Warzyn geologist will perform drilling, sampling, and decontamination operations. The geologist will also serve as the Site Safety Officer. Samples will be collected and logged under the supervision of the geologist.

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DECONTAMINATION PROCEDURES

Procedures to be followed to decontaminate equipment and personnel are described in the Site Health and Safety Plan. Please refer to the Health and Safety Plan established for the Treatability Studies sampling program for specific information pertaining to site procedures.

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SAMPLE HANDLING AND ANALYSIS

PARAMETERS

Soil samples collected for determining extent of contamination above clean-up levels listed in the ROD will be analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and polychlorinated biphenyl compounds (PCBs). Analytical methods are listed in Table 1. The analytical parameters are listed in Table 2.

Four additional duplicate samples (1 per 10) and four MS/MSD (matrix spike/matrix spike duplicate - 2 per 20) samples will also be collected as part of this sampling program establishing Quality Assurance/Quality Control (QA/QC) procedures to document the precision and accuracy of the data collected.

SAMPLE PRESERVATION

Soil samples collected in the field will be placed in their appropriate containers, stored in coolers, and then shipped to Warzyn's analytical laboratory for analysis.

[chi 607 41]

SAMPLE DOCUMENTATION

Samples will be collected under chain-of-custody procedures. Standard forms including sample labels, sample tags, chain-of-custody forms, and custody seals used for sample tracking will be maintained. A brief description of sample documents follow:

A. Chain-of-Custody Form

1. One form per shipping container (cooler)
2. Carrier service does not need to sign form, if custody seals remain intact
3. Use for all samples

B. Chain-of-Custody Seals

1. Two seals per shipping container to secure the lid and provide evidence that samples have not been tampered with
2. Cover seals with clear tape
3. Record seal numbers on Chain-of-Custody Form
4. Use for each container shipped (cooler)

C. Sample Tags

1. Each sample container must have a sample tag affixed to it
2. Sample tag numbers are recorded onto the Chain-of-Custody Form
3. Use for all samples

D. Sample Identification Record Form

1. Provide means of recording crucial sample shipping and tracking information
2. Contain information such as:
 - Sample number
 - Sample matrix
 - Sample location code
 - Sample round
 - Chain-of-Custody number
 - Lab Code
 - Date sampled
 - Date shipped
 - Airbill number
 - Sampling tag number

Paperwork accompanying the samples shipped to the laboratory will be sealed in a plastic bag that is taped to the inside of the cooler lid. Copies of the chain-of-custody forms, and other paperwork (if possible), will be retained for the field files.

Two chain-of-custody seals will be placed on opposite sides of the lid and extending down the sides of the cooler. The lid will be securely taped shut prior to shipment.

Representative photographs will be taken of sampling stations to show surrounding area and used to locate the boring location. The picture number and roll number will be logged in the field log book to identify by taking a photograph of an informational sign on the first frame of the roll. This sign would have the

job and film roll number written on it so as to identify the pictures contained on the roll.

For example:

American Chemical Services

Roll Number 1

Frame Number 1 of 36

21 June 1993

All sampling documentation will be maintained in Warzyn files as outlined in the Work Plan developed for the Treatability Studies Sampling Program.

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TABLE 1
Analytical Methods

<u>Parameter</u>	<u>Analytical Method</u>
VOCs	SW-846 8010/8020
SVOCs	SW-846 8270
PCBs	SW-846 8080

TABLE 2

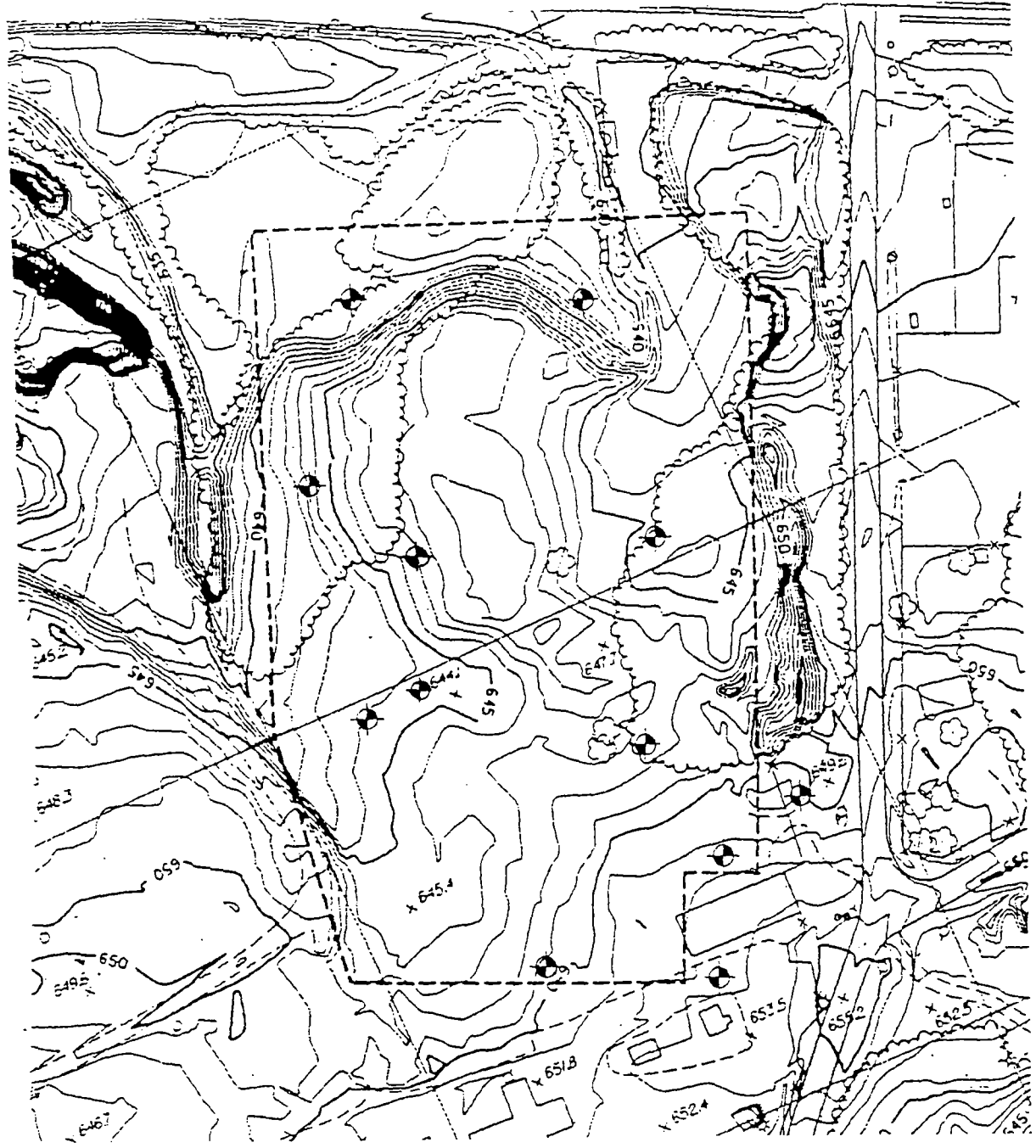
Analytical Parameters

<u>VOCs</u>	<u>SVOCs</u>
Vinyl Chloride	bis(2-Chloroethyl)ether
Chloroethane	1,4-Dichlorobenzene
Methylene Chloride	Isophorone
Acetone	1,2,4-Trichlorobenzene
1,1-Dichloroethene	Naphthalene
(cis) 1,2-Dichloroethene	Hexachlorobutadiene
Chloroform	2,4-Dinitrotoluene
1,2-Dichloroethane	N-Nitrosodiphenylamine
2-Butanone	Hexachlorobenzene
1,1,1 Trichloroethane	Pentachlorophenol
Carbon Tetrachloride	Di-n-butylphthalate
1,2 Dichloropropane	Chrysene
Trichloroethene	bis(2-Ethylhexyl)phthalate
1,1,2 Trichloroethane	Benzo(b)fluoranthene
Benzene	Benzo(k)fluoranthene
4-Methyl-2-Pentanone	Benzo(a)pyrene
Tetrachloroethene	Indeno(1,2,3-cd)pyrene
1,1,2,2 Tetrachloroethane	Dibenz(a,h)anthracene
Chlorobenzene	Benzo(g,h,i)perylene
Ethylbenzene	
Styrene	
Total Xylenes	

FIGURES

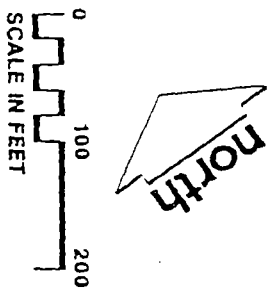


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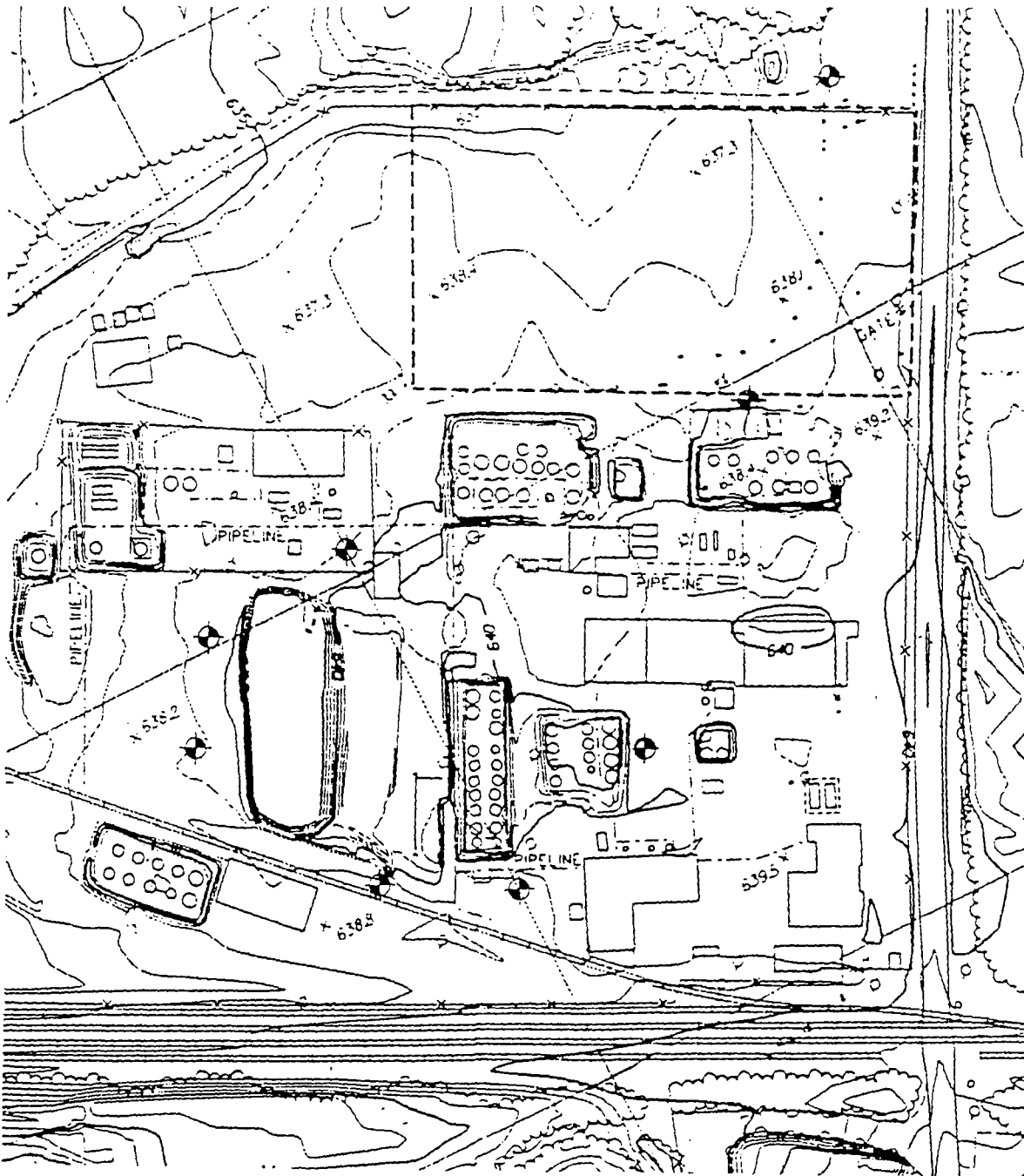


LEGEND

PROPOSED SOIL BORING LOCATION



	PROPOSED SOIL BORING LOCATION MAP		Developed By: <i>O.A.P.</i>	Drawn By: <i>D.L.L.</i>
	SUPPLEMENTAL SOIL SAMPLING		Approved By: <i>M. Harrison</i>	Date: <i>6/3/93</i>
	AMERICAN CHEMICAL SERVICES		Reference:	
	NPL SITE		Remarks:	
	GRIFFITH, INDIANA			




LEGEND

 PROPOSED SOIL BORING
 LOCATION

SCALE IN FEET
 0 100 200



 Drawing Number 20007001B11	PROPOSED SOIL BORING LOCATION MAP		Developed By: DAP	Drawn By: DLL
	SUPPLEMENTAL SOIL SAMPLING AMERICAN CHEMICAL SERVICES NPL SITE GRIFFITH, INDIANA		Approved By: W. H. H. M. M.	Date: 6/5/07
			Reference:	
			Remarks:	



A



PROTOCOL FOR SPLIT-SPOON SAMPLING OF SUBSURFACE SOILS

Subsurface soil samples are collected by performing soil borings at selected locations at the site. Soil borings are performed using hollow stem auger (HSA) and split-spoon sampling techniques. Soil samples are collected at 2.5 foot intervals from 0 to 10 feet, and at 5 foot intervals thereafter to the borehole bottom, in accordance with American Society of Testing and Materials (ASTM) standards (ASTM:D 1586-84). A standard 2-inch OD split-spoon sampler is used for collection of soil samples. The drilling is directed by Warzyn's Site Geologist, who logs geologic materials encountered during drilling, field screens auger cuttings and soil samples, and observes the drilling activities and supervises sample collection.

As samples are obtained in the field, they are visually classified by Warzyn's Site Geologist in accordance with ASTM:D 2488-84. Sample lithology is recorded using the Unified Soil Classification System. Soil boring logs, documenting soil types and subsurface conditions, are completed by Warzyn's site representative. Actual borehole depth and selection of soil samples for analysis are based upon instrument screening, visual observation and odor.

Drill cuttings and liquids generated are left at the borehole. When required by site conditions, these spoils are contained in 55-gallon, steel drums. When completed, borings are backfilled with bentonite cement mixed with cuttings. The split-spoon sampler is cleaned between samples to minimize cross contamination. The cleaning procedure consists of a soap and water or trisodium phosphate (TSP) wash, followed by a triple rinse with deionized or distilled water. To avoid cross contamination between soil borings, drilling augers are steam cleaned between holes.

In accordance with Warzyn's Site Safety Plan, a photoionization detector (PID) and explosimeter are used to monitor ambient air concentrations at the borehole and within the work zone during drilling. The PID is also used for field screening soil samples for the presence of volatile organic compounds. Personal protective equipment is utilized by site personnel during performance of sampling activities, as specified in the Site Safety Plan.

Soil samples are placed in laboratory-cleaned glass jars and labelled, identifying sample number, location and date, and sampling personnel. Samples submitted for analysis are preserved on ice and shipped in a cooler overnight to Warzyn's analytical laboratory in Madison, Wisconsin. Warzyn standard chain of custody procedures are followed regarding shipment and receipt of samples.

[95-Assessment]
March 1993